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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,974

09/08/2006

Keisuke Suzuki

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EXAMINER

FIERRO, ALICIA

ART UNIT

PAPER NUMBER

1626

MAIL DATE

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07/02/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,974	Applicant(s) SUZUKI, KEISUKE	
	Examiner Alicia L. Fierro	Art Unit 1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 8-12 and 16-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 13-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/8/06 and 5/27/09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. The instant application is a 35 U.S.C. 371 national stage filing of International Application No. PCT/JP05/004723, filed March 10, 2005, which claims priority to JP 2004-067741, filed March 10, 2004. Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a certified English translation of the foreign application must be submitted in reply to this action. 37 CFR 41.154(b) and 41.202(e).

Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on September 8, 2006 and May 27, 2009 were in compliance with the provisions of 37 CFR 1.97 and 37 CFR 1.98. The IDS documents were considered. Signed copies of form 1449 are enclosed herewith.

Election/Restrictions

3. Applicant's election without traverse of Group I (claims 1-7 and 13-15, drawn to methods of making compounds of Formula (I)) in the reply filed on May 29, 2009 is acknowledged. Applicant's election of the particular species of the compound

Upon further consideration, the requirement for an election of species of a particular compound is withdrawn.

4. Currently, Claims 1-20 are pending in the instant application. Claims 8-12 and 16-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a non-elected invention. Claims 1-7 and 13-15 read on an elected invention and are therefore under consideration in the instant application.

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In the instant case, the abstract exceeds 15 lines and 150 words. Appropriate correction is required.

Claim Objections

6. Claims 13-15 are objected to for containing non-elected subject matter as a result of being dependent upon a withdrawn base claim.

Claim Rejections - 35 USC § 112

(second paragraph)

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-7 and 13-15 are rejected under 35 U.S.C. 112, second paragraph as being

indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The use of the term “represents” in defining substituents renders the claims indefinite. A claim to a chemical compound cannot be open-ended, but must be claimed with precision. This rejection can be overcome by amending every incidence of the term “represents” in the definitions of substituents in the rejected claims to “is” or “are” as appropriate. Additionally, for example, in claim 1 a “compound represented by the following Formula (I)” should be amended to “compound of the following Formula (I).

b. The use of the phrase “described above” in the rejected claims renders the claims indefinite. It is not clear whether this phrase makes reference back to information described in the disclosure, or if it is intended to encompass only limitations set forth in the claims. If the intention of this phrase is to encompass material from the disclosure, *Ex parte Fressola*, 27 USPQ 2d 1608 states that claims must stand alone to define the invention and incorporation into claims by express references to the specification is not permitted. If the phrase is only intended to encompass limitations from previous claims, it is noted that a dependent claim necessarily claims all limitations of the claim from which it depends. Therefore, the phrase “described above” is not necessary and should be removed.

c. Regarding claims 3, 4, and 7, a catalyst and solvent are specifically claimed. There is insufficient antecedent basis for these limitation in the claim as claim 1 does not include the use of a catalyst or a solvent. It is recommended that the dependency of the rejected claims be amended so that they are dependent on a base claim which does have

support for the claimed feature (i.e. claim 3 could depend from claim 2) or that “further comprising” language be used.

d. Regarding claim 4, the phrase "such as" renders the claims indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention.

See MPEP § 2173.05(d).

e. Regarding claims 13-15, the limitation “M represents...” renders the claims indefinite as no "M" variable can be found in the instantly examined claims. This limitation should be deleted so that the claim limitations include only variables found in the examined claims.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

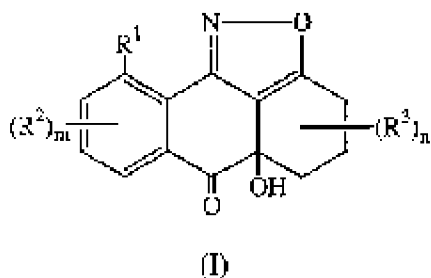
10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness

or nonobviousness.

11. Claims 1-7 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (JP 2004-143082), which has a publication date of May 20, 2004, as evidenced by the Machine translation of the same document, in view of Bachman et al., *Journal of the American Chemical Society*, Vol. 57, No. 6, June 1935, pp. 1095-8.

12. Suzuki et al. teach compounds of the following formula, as well as methods of preparing the compounds utilizing a benzoin condensation mechanism:



13. The preparation methods disclosed by Suzuki et al. can be very lengthy (e.g. up to 144 hours for the reaction mechanism taught in Scheme II [0035]). The compounds taught by Suzuki et al. differ slightly from those in the instant claims. Particularly, the instant R4 position is required to be a hydroxy group in the prior art compounds. Although R4 cannot be hydroxy in the instant claims, C1 to C10 alkoxy groups are possible. Specifically, hydrogen and methyl are deemed to be obvious variants of each other. *In re Wood*, 199 USPQ 137. Further, it has been established by the case law that the interchange of an alkyl group and hydrogen, in and of itself, is obvious. *Ex Parte Bluestone*, 135 USPQ 199.

14. Suzuki et al. do not disclose the instantly claimed production method wherein a compound of Formula (IIa) or (IIb) is treated under acidic conditions. In the claimed method,

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the ketone group is formed via a Pinacol rearrangement. The Pinacol rearrangement reaction is a method which is well-known in the art for being a quick and efficient method of synthesizing ketone compounds. Bachmann et al. disclose that diaryldihydrophenanthrenediols were successfully rearranged to 9,9-diaryl-phenathrolines via treatment with a hot solution of iodine in acetic acid, without the formation of any undesired byproducts (p.1095, "Rearrangement of the Pinacols"). Although a specific temperature for the reaction is not discussed, it is disclosed that the solution is "hot" (p. 1095), and also that the reaction takes place at reflux temperature for one hour. Further, water is taught as a solvent (p.1097, "Rearrangement of the Pinacols"). There is no evidence provided in the Bachmann reference to suggest that the reaction temperature would be outside the instantly claimed range. However, it is also noted that changing the temperature of a reaction would be considered routine optimization of a known method to a person of ordinary skill in the art and is therefore not considered inventive, absent a showing of criticality or unexpected results.

15. The motivation to make the instantly claimed compounds from the instantly claimed method derives from the expectation that structurally similar compounds would possess similar chemical activity (i.e. they would be useful as intermediates for various pharmaceutical and agricultural compounds, as disclosed by Suzuki et al.([0001])). Thus, it would have been *prima facie* obvious at the time the invention was made for one of ordinary skill in the art to produce H/alkyl analogs of the compounds taught by Suzuki et al. with a reasonable expectation of success. The motivation to use the pinacol rearrangement reaction to produce the instantly claimed compounds is the fast reaction time (i.e. one hour), as disclosed by Bachmann et al., which led to an efficient ketone synthesis without the formation of any undesired byproducts.

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Therefore, it would have been prima facie obvious at the time the invention was made for a person of ordinary skill in the art to use the pinacol rearrangement method taught by Bachmann et al. to produce obvious variants of the compounds taught by Suzuki et al. in order to obtain the claimed compounds in a faster reaction time with no formation of undesired byproduct.

Conclusion

16. No claims are allowed.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia L. Fierro whose telephone number is (571)270-7683. The examiner can normally be reached on Monday - Thursday 6:00-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Joseph McKane can be reached on (571)272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Alicia L. Fierro/
Examiner, Art Unit 1626

/REI-TSANG SHIAO /
Primary Examiner, Art Unit 1626